Sept. 27, 1932. G. C. MUNOZ 1,879,414

PILE SHOE

Filed May 10, 1930 2 Sheets-Sheet 1

FIG. I.

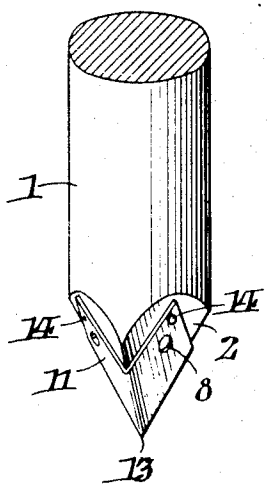


FIG. II.

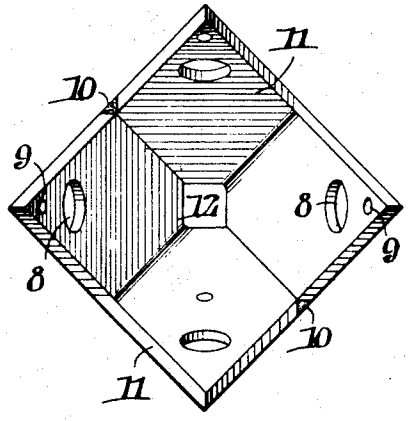


FIG. VII.

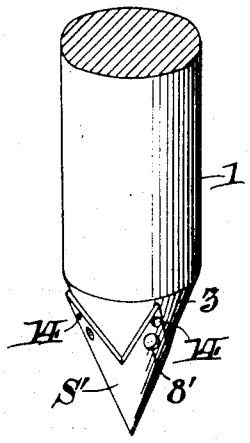


FIG. III.

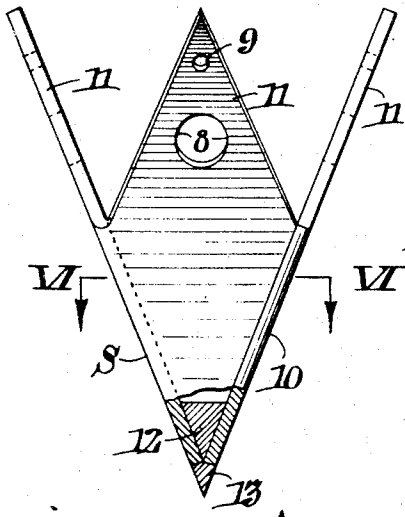


FIG. V.

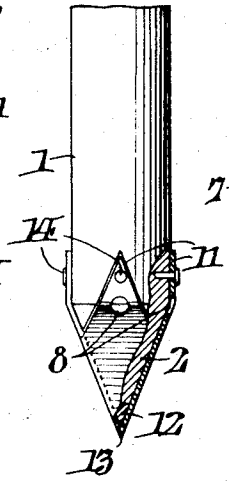


FIG. IV.

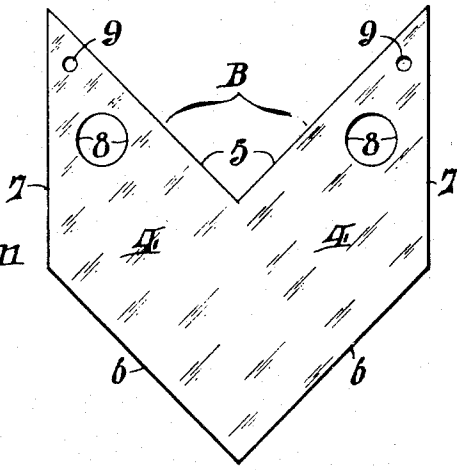


FIG. VIII

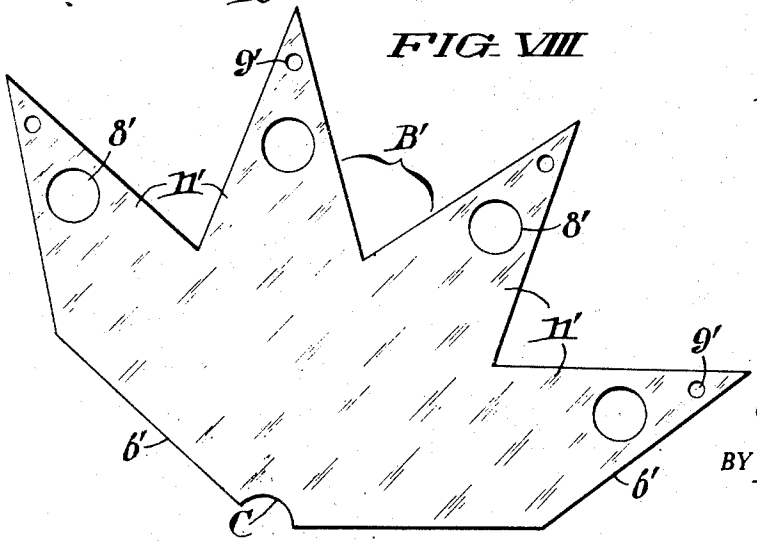
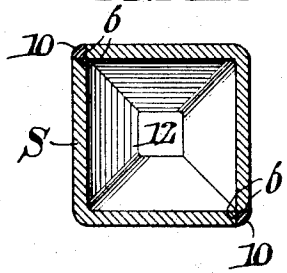


FIG. VI.



INVENTOR:
Gonzalo C. Munoz,
BY Fraley & Paul
ATTORNEYS.

Sept. 27, 1932. G. C. MUNOZ 1,879,414

PILE SHOE

Filed May 10, 1930 2 Sheets-Sheet 2

FIG. IX.

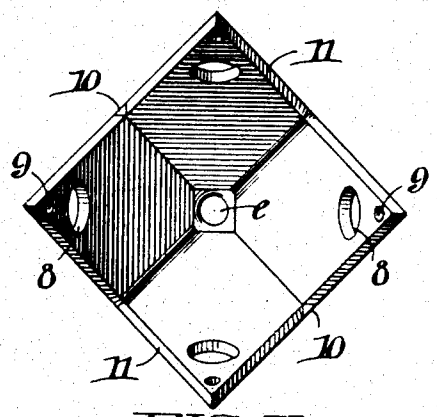


FIG. X.

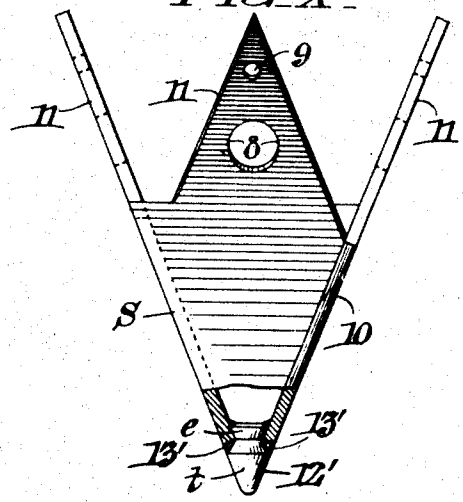


FIG. XI.

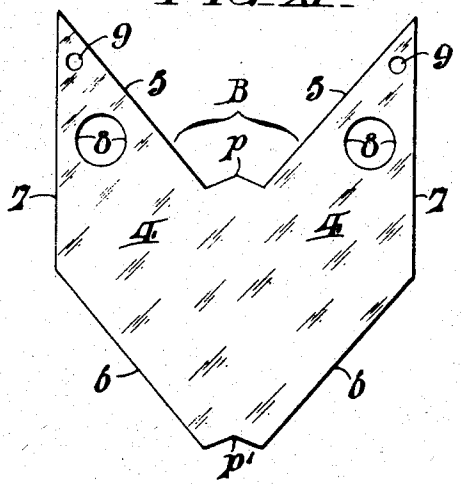


FIG. XII.



WITNESSES

John A. Weidler

George M. Marshall

INVENTOR:

Gonzalo C. Munoz,

BY Fraley & Call

ATTORNEYS.

Patented Sept. 27, 1932 1,879,414

UNITED STATES PATENT OFFICE

GONZALO C. MUNOZ, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE AMERICAN PULLEY COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

PILE SHOE

Application filed May 10, 1930. Serial No. 451,239.

This invention relates to piles useful in the formation of foundations for buildings, piers, wharves and similar structures, and it has more particular reference to the heavy timber variety adapted to be driven into the earth.

The primary object of this invention is to provide a shoe for timber piles more especially, such shoe being fabricated in a manner conducive of easy attachment while affording effective protection for the penetrating end of the pile against splitting or spreading.

Another object of this invention is the provision of a shoe for timber piles embodying halves which when united afford a pyramidal point with attaching means capable of easy flexure in accommodating said shoe to piles of differing diameter.

Other objects not specified at this time will later on appear, or be referred to; while the nature, characteristic features and scope of this invention will be clearly understood from the following description when considered in connection with the accompanying drawings forming a part hereof, and thereafter finally claimed.

In the drawings:

Fig. I is a perspective view of the lower portion of a pile having my improved shoe attached thereto.

Fig. II is a relatively enlarged plan view of the shoe.

Fig. III is an elevation of the same, with a portion of the point broken away to better disclose otherwise hidden features.

Fig. IV is a development of one half component of the pile shoe.

Fig. V is a perspective view showing how the shoe attaching portions may be flexed to accommodate a pile end of lesser diameter than illustrated by Fig. I.

Fig. VI is a section, taken on the plane indicated by the arrows VI—VI in Fig. III.

Fig. VII is a perspective view, similar to Fig. I, illustrative of a modified form of the invention.

Fig. VIII is a development of the shoe shown in the preceding illustration.

Fig. IX is a plan view of a further slightly modified form of the invention.

Fig. X is an elevation of the same, with a portion of the point in section to better illustrate a different type of tip or point.

Fig. XI is a development of one half component of the shoe illustrated in Figs. IX and X; and,

Fig. XII is a perspective of the modified tip or point.

Referring more in detail to the drawings, the reference numeral 1 designates a portion of a timber pile, the lower end whereof is conveniently, although not essentially, shaped to afford a pyramidal point 2, Figs. I and V; or, said lower end may be appropriately made conical, as indicated at 3 in Fig. VII.

In producing pile shoes for application to pyramidal points 2, I firstly sever blanks B, of the form illustrated in Figs. IV and XI, from sheet metal such as steel, for example, of suitable width and thickness. Each such blank B, Fig. IV, it will be remarked, is of duplex formation; or, more specifically, said blank embodies double rhomboids 4, the major dimensional edges 5, 6 whereof conveniently meet at angles of ninety degrees, while the minor dimensional edges 7 are parallel. It is also to be noted that the edges 7 align with the longitudinal edges of the sheet metal from which the blanks B are severed, so that a succession of such blanks may be produced with a minimum of wastage. These blanks B are also, subsequently or simultaneously, provided with comparatively large and relatively small apertures and holes 8, 9, respectively, for purposes later on explained.

In the slightly modified contour of blank B, shown in Fig. XI, corresponding references are applied in order to avoid repetitive description. The only differing feature has reference to the formation in said blank of an obtuse-angular point p, intervening the upper major dimensional edges 5, and a corresponding angular recession p' at the lower end intermediate the major dimensional edges 6, for purposes later on explained.

Each blank B is suitably bent medially, or along a line passing through the angular

points of the meeting edges 5, 6; or the angular points of the parts p, p'; to conform with the angular relation of adjoining faces of the pyramidal pile point 2, as best understood from Fig. I. Now it will be readily understood that, when two such bent blanks B are opposedly placed and united, as by welding 10, along the abutting edges 6, there is produced a shoe S having the general appearance illustrated in Figs. II and III, or IX and X. The shoe S is of hollow rectangular cross-section insofar as the lower half or point is concerned, and also embodies upwardly directed triangular attaching-sections or ears 11, respectively co-planar with the faces of said point portion. Attention is also directed to the fact that the apertures 8 are located substantially central of the sections 11, while the holes 9 are proximate the apices thereof. The apex of the point or pyramidal section of the shoes is preferably reinforced by an insert 12, and the tip welded at 13 to solidified formation, to counteract any tendency to disruption when penetrating the ground and encountering hard substances.

In the modified form of Figs. IX and X, instead of fitting an insert 12, as above described, I make use of a solid tip or point 12′ of somewhat plumb-bob formation. More specifically, the point 12′ comprises an inverted conical tip t, with a grooved extension e, about which the hereinbefore referred to angular recessions p' are adapted to lap, when the blank B of Fig. XI is medially bent as aforesaid, and be united integrally in position by welding 13′. Incidentally, the parts p, p', are provided to accommodate the bending medially to semi-pyramidal or conical contour, in an obvious manner, without drawing or contraction of the metal at said parts.

In the modified form of my invention shown in Figs. VII and VIII, it will be remarked, the blank B′ substantially embraces the blank B of Fig. IV in duplex, with the exception of a cut-out C, whereby there is provided four attaching sections or ears 11′; said blank B′ when united along the edges 6′, as by welding in the manner hereinbefore set forth, being conformable to the conical point 3 of the pile 1 shown in Fig. VII, and thus constituting a shoe S′ as above explained. The cut-out C serves to accommodate a tip or point 12′ of the type described in connection with Figs. IX—XII, inclusive.

Shoes S or S′ are attached to the complementarily configured pile points 2, 3, respectively, by driving appropriate fastening means 14 through the holes 9, in an obvious manner. Furthermore, when shoes S or S′ are to be attached to piles 1 of less diameter than those indicated in Figs. I and VII, it will be understood from Fig. V that the attaching sections or ears 11, 11′ can be readily flexed inward to conform to the circumferential surface of a pile 1, incident to provision in said sections of the apertures 8, 8′. In other words, the apertures 8, 8′ are provided in the attaching sections or ears 11, 11′ so as to render said sections or ears more or less flexible whereby they can be readily bent for attachment to smaller diameter piles 1.

From the foregoing it will be obvious to those skilled in the art that modifications may be made without departing from the spirit of this invention, and it is to be understood that all such reasonable variations are contemplated by me as fall within the scope of the following claims.

Having thus described my invention, I claim:

1. A pile shoe embodying a hollow geometrically-configured penetrating portion with integrally formed attaching points co-extensive therewith, said points being apertured for the purpose of flexing.

2. A pile shoe embodying a hollow portion with geometrically-configured walls mergent into a penetrating point, said walls embodying co-extensive ears apertured for purposes of flexure and attachment, and a reinforcing insert secured in the apex of the penetrating point.

3. A pile shoe comprising integrally united opposing blanks, each said blank embodying duplex rhomboidal sections with the free angled portions apertured for purposes of attachment and flexure, and a pyramidal reinforce secured in the apex of said shoe.

4. The combination with a pyramidally pointed wooden pile of a correspondingly-shaped hollow shoe embodying opposed complemental laterally-bent sections having co-extensive attaching ears, said ears being centrally apertured for purposes of flexure and holed for the reception of means whereby said shoe is secured to the faces of the pile point.

5. The combination with a pyramidally-pointed wooden pile of a correspondingly-shaped hollow shoe having co-extensive attaching ears, said ears being apertured for flexure into engagement with the body of the pile adjoining its point for the purpose specified.

6. The combination with a pointed wooden pile of a complementally shaped hollow shoe having co-extensive attaching ears, said ears being apertured and pierced respectively to accommodate flexure and attachment to the body of the pile.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this 1st day of May, 1930.

GONZALO C. MUNOZ.